

Keir C. Neuman

Laboratory of Single Molecule Biophysics
National Heart, Lung, and Blood Institute
National Institutes of Health
Building 50, Room 3517
50 South Drive, Bethesda MD 20892-8013

Tel 301 496 3376
Fax 301 402 3404
neumankc@mail.nih.gov

Education

- 2002 Ph.D. Physics, Princeton University, Princeton, NJ
1997 M.A. Physics, Princeton University, Princeton, NJ
1994 B.A., *cum laude*, Physics and Applied Math, University of California, Berkeley, Berkeley, CA

Research Experience

- 2015- Senior Investigator, Laboratory of Single Molecule Biophysics
National Heart, Lung, and Blood Institute, National Institutes of Health
- 2007-2015 Tenure Track Investigator, Laboratory of Molecular Biophysics
National Heart, Lung, and Blood Institute, National Institutes of Health
- 2004-2007 Human Frontiers Postdoctoral Fellow with David Bensimon and Vincent Croquette
Laboratoire de Physique Statistique, Ecole Normale Supérieure
- 2002–2004 Postdoctoral Fellow with Steven M. Block
Department of Biology, Stanford University
- 1999-2002 Research Assistant with Steven M. Block
Department of Biology, Stanford University
- 1997-1999 NIH Biophysical Training Grant with Steven M. Block
Department of Biology, Princeton University
- 1996-1997 Research Assistant with Keren Bergman
Department of Electrical Engineering, Princeton University
- 1995-1996 Liposome Fellow with Sol Gruner
Department of Physics, Princeton University
- 1993-1995 Research Assistant with Roger Falcone
Department of Physics, University of California, Berkeley

Teaching Experience

- 2009-2011 Co-organized and taught two week EMBO practical course with 20 students: *Single molecule analysis of DNA protein interactions*. Paris, France
- 1996-1998 Teaching Assistant, Advanced Physics Laboratory
Princeton University, Princeton, NJ
- 1993-1995 Teaching Assistant, Advanced Physics Laboratory
University of California, Berkeley, Berkeley, CA
- 1989-1991 Teaching Assistant and Tutor, Math and Physics
Diablo Valley College, Pleasant Hill, CA

Keir C. Neuman

Grants, Awards, and Honors

- 2015 Cozzarelli Prize, Proceedings of the National Academy of Sciences.
2013 National Heart, Lung, and Blood Institute Outstanding Mentor Award
2012 Burroughs Wellcome Fund Future of Biophysics Symposium
2010-2013 Human Frontiers Young Investigator Grant with Mihály Kovács,
Department of Biochemistry, Eötvös University, Hungary
2009 NIH Outstanding Mentor Award
2004-2007 Human Frontiers Long Term Fellowship
2004-2007 Ruth L. Kirschstein National Research Service Award, *declined*
1997-1999 NIH Biophysics Training Grant
1995 Liposome Fellow
1994 Phi Beta Kappa
1992, 1993 University of California, Berkeley Academic Scholar
1992 University of California, Berkeley Class of 1921 Scholar

Professional Affiliations

- 1996- Member Biophysical Society
1996- Member Optical Society of America
1996- Member American Physical Society
2010- Adjunct Faculty Department of Chemical Physics, University of Maryland
College Park

Service to the community

- 2014-2017 **Editorial Board Member:** Biophysical Journal
2014-2017 **Editorial Board Member:** Journal of General Physiology
2015 Organizer and moderator, Cell press Webinar: **Biophysics of Nuclear Organization**
2015 “Physics Café” public discussion on science and biophysics. Aspen, CO.
2012 **Organizer and chair:** “Matrix biology and matrix remodeling” symposium,
NIH Research Festival. Bethesda, MD
2009-2011 **Co-organizer and instructor: EMBO practical course (2 weeks),**
Single molecule analysis of DNA protein interactions. Paris, France
2011 **External thesis examiner:** Institute Jacques Monod, Paris, France
2012 **External thesis examiner:** University of Maryland, Department of
Chemical Physics, College park Maryland
2005 **Session Chair:** Biophysical Society Annual Meeting, Long Beach, CA
2011 **Session Chair:** American Physical Society March meeting, Dallas, TX
2013 **Session Chair:** American Physical Society March meeting, Baltimore MD

Service to the NIH

- 2015 **“4D Nucleome”:** Review Panel Member
2015 **“Follow that Cell” Challenge:** Review Panel Member
2010- **Chair:** Biophysics core facility steering committee, NHLBI
2011- **Chair:** NHLBI machine shop facility
2012- **NIH Laser Safety committee:** Member

Keir C. Neuman

2014	National Institute of Biomedical Imaging and Bioengineering (NIBIB) Intramural Long-Term Planning Committee: Member
2013-2018	Early Independent Scientist (Greg Alushin, NHLBI) mentor committee: Member
2009	NHLBI investigator search committee: member
2012, 2013	Stadtman Investigator Search committee: Member Biophysics and Biomedical Engineering search
2013	Laboratory of Chemical Physics (NIDDK) Search committee: Member
2010	Selection committee: NIH National Graduate Student Research Festival
2010-2014	Selection and organization committee: NHLBI Division of Intramural Research Seminar Series
2011-2013	NIH Tenure Track Committee: NHLBI representative
2009-2011	Admissions committee: Oxford-Cambridge Scholars Program NIH
2011	NIH Fare Award: Judge
2012, 2013	NHLBI retreat poster judge

Journal and grant reviewing

Manuscript Reviews: Nature, Nature Methods, eLife, Nature Chemistry, Nature Communications, Nature Chemical Physics, Nature Structural and Molecular Biology, Proceedings of the National Academy of Sciences, Biophysical Journal, Physical Review Letters, Plos Biology, Plos1, Journal of Biological Chemistry, Cell Reports, Journal of Molecular Biology, Methods, Europhysics Letters, Journal of Applied Physics, Nanotechnology, Journal of Measurement Science and Technology, FEBS Journal, Optics Express, Journal of Biophotonics, Quarterly Review of Biophysics, Journal of Optics, Applied Physics B – Lasers and Optics, BBA - Gene Regulatory Mechanisms, IEEE Transactions on Nanobioscience, Biochemistry, Review of Scientific Instruments, Scientific Reports, Chemical Reviews, The Journal of Physical Chemistry Letters, Biosensors, Cytometry.

Grant Reviews

Flanders Research Foundation (FWO), Belgium 2015
NIH “Follow that Cell” challenge, review panel, 2015
NIH “4D Nucleome” review panel, 2015
L'Agence Nationale de la Recherche, France 2014, 2015
The Wellcome Trust/DBT India Alliance 2014
Deutsche Forschungsgemeinschaft (German Research Foundation) 2013
Department of Energy Basic Energy Sciences 2013
American Heart Association Peer Review Study Group 2008, 2010
National Science Foundation ad hoc reviewer 2008, 2009, 2012, 2013, 2014
NIH Molecular Genetics Study Section ad hoc reviewer 2009, 2010
Netherlands Organization for Scientific Research (NWO) fellowship review 2009
Burroughs Wellcome Trust ad hoc reviewer 2009, 2010, 2014
Graduate Women in Science reviewer 2011
The National Institute of Justice (NIJ), Forensic Science Research and Development Program 2011

Patents and Commercialization

Neuman, K.C. et al. Fluorescent nanodiamonds for use as fiducial markers for microscopy and fluorescence imaging. **2015 US Patent Application No. 62/262058.**

Keir C. Neuman

-Patent related to the use of fluorescent nanodiamonds as ultra-stable and precise fiducial markers.

Silver, J.E., Z. Li, and **K.C. Neuman**. Method for detection of an analyte by movement of tethered microparticles. **2014, US Patent Application No. 62/015122**.

-Patent related to single-molecule analyte detection by tethered particle motion.

Bumb, A., S.K. Sarkar, **K.C. Neuman**, and M.W. Brechbiel. Process to coat nanodiamonds with a biocompatible shell with a final monodisperse nanoparticle agent. **2012, US Patent Application No. 61/672996**.

- Patent related to silica coating and functionalization of fluorescent nanodiamonds.

Sarkar, S.K., A. Bumb, and **K.C. Neuman**. Imaging methods and computer-readable media. **2012, US Patent Application No. 61/711702**.

- Patent related to background-free imaging with fluorescent nanodiamonds.

Publications (*corresponding author)

1. Dittmore A, J. Silver, S.K. Sarkar, B. Marmer, G.I. Goldberg, **K.C. Neuman*** (2016). Internal strain drives spontaneous periodic buckling in collagen and regulates remodeling. **Proceedings of the National Academy of Sciences** [Epub ahead of print]
2. Seol Y., M.P. Strub, and **K.C. Neuman*** (2016). Single molecule measurements of DNA helicase activity with magnetic tweezers and t-test based step-finding analysis. **Methods** **S1046-2023**:30120-7 (Epub ahead of print).
3. Vecchiarelli A.G., M. Li, M. Mizuuchi, L.C. Hwang, Y. Seol, **K.C. Neuman**, K. Mizuuchi (2016). Membrane-bound MinDE complex acts as a toggle switch that drives Min oscillation coupled to cytoplasmic depletion of MinD. **Proceedings of the National Academy of Sciences** pii: 201600644 (Epub ahead of print).
4. Herbert K.M., S.K. Sarkar, M. Mills, H.C. Delgado De la Herran, **K.C. Neuman***, J.A. Steitz (2016). A heterotrimer model of the complete Microprocessor complex revealed by single-molecule subunit counting. **RNA** **22**:175-83.
5. Hu L., A.G. Vecchiarelli, K. Mizuuchi, K.C. Neuman, J. Liu (2015). Directed and persistent movement arises from mechanochemistry of the ParA/ParB system. **Proceedings of the National Academy of Sciences** **112**:E7055-64
6. Seol Y, H. Zhang, K. Agama, N. Lorence, Y. Pommier, and **K.C. Neuman*** (2015). Single-molecule supercoil-relaxation assay as a screening tool to determine the mechanism and efficacy of human topoisomerase IB inhibitors. **Molecular Cancer Therapeutics** **14**:2552-9.
7. Harami G.M., N.T. Nagy, M. Martina, K.C. Neuman, and M. Kovács (2015). The HRDC domain of E. coli RecQ helicase controls single-stranded DNA translocation and double-stranded DNA unwinding rates without affecting mechanoenzymatic coupling. **Scientific Reports** **5**:11091.
8. Litwin T.R., M. Solà, I.J. Holt, and **K.C. Neuman*** (2015). A robust assay to measure DNA topology-dependent protein binding affinity. **Nucleic Acids Research** **43**:e43.
9. Vecchiarelli A.G., **K.C. Neuman**, Y. Seol, and K. Mizuuchi (2015). A moving ParA gradient on the nucleoid directs subcellular cargo transport via a chemophoresis force. **BioArchitecture** **4**:154-159.

Keir C. Neuman

10. Aldred K.J., E.J. Breland, V. Vlčková, M.P. Strub, **K.C. Neuman**, R.J. Kerns, and N. Osheroff (2014). Role of the Water-Metal Ion Bridge in Mediating Interactions between Quinolones and *Escherichia coli* Topoisomerase IV. **Biochemistry** **53**:5558-67.
11. Silver J., Z. Li, **K. Neuman** (2014). Tethered-bead, immune sandwich assay. **Biosensors and Bioelectronics** **63**:117-123.
12. Khiati S., Y. Seol, K. Agama, I.D. Rosa, S. Agrawal, K. Fesen, H. Zhang, **K.C. Neuman**, and Y. Pommier (2014). Poisoning of mitochondrial topoisomerase I by lamellarin D. **Molecular Pharmacology** **86**:193-9.
13. Sarkar S.K., A. Bumb, X. Wu, K.A. Sochacki, P. Kellman, M.W. Brechbiel, and **K.C. Neuman***(2014). Wide-field *in vivo* background free imaging by selective magnetic modulation of nanodiamond fluorescence. **Biomedical Optics Express** **5**:1190-202.
14. Vecchiarelli A.G., **K.C. Neuman**, and K. Mizuuchi (2014). A propagating ATPase gradient drives transport of surface-confined cellular cargo. **Proceedings of the National Academy of Sciences** **111**:4880-5.
15. **Neuman K.C.*** (2013).The tail that wags the dog: Topoisomerase IV ParC C-terminal domain controls strand passage activity through multipartite topology-dependent interactions with DNA. **Journal of Molecular Biology** **425**:3025-8.
16. Sarkar S.K., A. Bumb, M. Mills, and **K.C. Neuman*** (2013). SnapShot: Single-molecule fluorescence. **Cell** **153**:1408-1408.
17. Seol Y. and **K.C. Neuman*** (2013). SnapShot: Force spectroscopy and single-molecule manipulation. **Cell** **153**:1168-1168.
18. Bumb A., S.K. Sarkar, N. Billington, M.W. Brechbiel, and **K.C. Neuman*** (2013). Silica encapsulation of fluorescent nanodiamonds for colloidal stability and facile surface functionalization. **Journal of the American Chemical Society** **135**:7815-8.
19. Seol Y., A.C. Gentry, N. Osheroff, and **K.C. Neuman*** (2013). Chiral discrimination and writhe-dependent relaxation mechanism of human topoisomerase IIa. **Journal of Biological Chemistry** **288**:13695-703.
20. Seol, Y., A.H. Hardin, M.P. Strub, G. Charvin, and **K.C. Neuman*** (2013). Comparison of DNA decatenation by *Escherichia coli* topoisomerase IV and topoisomerase III: Implications for non-equilibrium topology simplification. **Nucleic Acids Research** **41**:4640-9.
21. Seol, Y., H. Zhang, Y. Pommier, **K.C. Neuman*** (2012). A kinetic clutch governs religation by type IB topoisomerases and determines camptothecin sensitivity. **Proceedings of the National Academy of Sciences** **109**:16125-30.
22. Sarkar, S.K., B. Marmer, G. Goldberg, and **K.C. Neuman*** (2012). Single-molecule tracking of collagenase on native type I collagen fibrils reveals degradation mechanism. **Current Biology** **22**:1047-56.
23. Eisen, A.Z., S.K. Sarkar, **K.C. Neuman**, G.A. Bannikov and G.I. Goldberg (2012). Matrix metallopeptidase 9/gelatinase B. **Handbook of Proteolytic Enzymes, 3rd Edition**. Neil D. Rawlings editor. (Academic Press, Inc., San Diego, California).
24. He J.,H.M. Cooper, A. Reyes, M. Di Re, H. Sembongi, T.R. Litwin, J. Gao, **K.C. Neuman**, I.M. Fearnley, A. Spinazzola, J.E. Walker, and I.J. Holt (2012). Mitochondrial nucleoid interacting proteins support mitochondrial protein synthesis. **Nucleic Acids Research** **40**:6109-21.

Keir C. Neuman

25. Bumb, A., S.K. Sarkar, X.S., Wu, M.W. Brechbiel, and **K.C. Neuman*** (2011). Quantitative characterization of fluorophores in multi-component nanoprobes by single-molecule fluorescence. **Biomedical Optics Express** **2**:761-2769.
26. Seol, Y. and **K.C. Neuman*** (2011). Magnetic Tweezers for Single-Molecule Manipulation. **Methods in Molecular Biology: Single Molecule Analysis** **783**:265-293.
27. Seol, Y. and **K.C. Neuman*** (2011). Single-molecule measurements of topoisomerase activity with magnetic tweezers. **Methods in Molecular Biology: Single Molecule Enzymology** **778**:229-241.
28. Hardin, A.H., S.K. Sarkar, Y. Seol, G.F. Liou, N. Osheroff, and **K.C. Neuman*** (2011). Direct measurement of DNA bending by type IIA topoisomerases: implications for non-equilibrium topology simplification. **Nucleic Acids Research** **39**:5729-5743.
29. Pitts, S.L., G.F. Liou, L.A. Mitchenall, A.B. Burgin, A. Maxwell, **K.C. Neuman**, and N. Osheroff (2011). Use of divalent metal ions in the DNA cleavage reaction of topoisomerase IV. **Nucleic Acids Research** **39**:4808-4817.
30. **Neuman, K.C.*** (2010). An evolutionary twist on topoisomerases: Conversion of gyrase to topoisomerases IV. **Proceedings of the National Academy of Sciences** **107**: 22363–22364.
31. **Neuman, K.C.*** (2010). Single-molecule measurements of DNA topology and topoisomerases. **Journal of Biological Chemistry** **285**:18967-71.
32. **Neuman, K.C.***, G. Charvin, D. Bensimon and V. Croquette (2009). Mechanisms of chiral discrimination by Topoisomerase IV. **Proceedings of the National Academy of Sciences** **106**:6986–6991.
33. Bouthier de la Tour, C., L. Amrani, R. Cossard, **K.C. Neuman**, M.C. Serre, and M. Duguet (2008). Mutational analysis of the helicase-like domain of Thermotoga maritima reverse gyrase. **Journal of Biological Chemistry** **283**:27395-402.
34. **Neuman, K.C.*** and A. Nagy (2008). Single-molecule force spectroscopy: optical tweezers, magnetic tweezers and atomic force microscopy. **Nature Methods** **5**:491-505.
35. **Neuman, K. C.***, T. Lionnet, and J.-F. Allemand (2007). Single-molecule micromanipulation techniques. **Annual Review of Materials Research** **37**:33-67.
36. Allemand, J.-F., D. Bensimon, G. Charvin, V. Croquette, G. Lia, T. Lionnet, **K.C. Neuman**, O.A. Saleh, and H. Yokota (2007). Studies of DNA-Protein Interactions at the Single Molecule Level with Magnetic Tweezers. **Lecture Notes Phys.** **711**:123-140.
37. Dalal, R. V., M. H. Larson, **K.C. Neuman**, J. Gelles, R. Landick, and S.M. Block (2006). Pulling on the nascent RNA during transcription does not alter kinetics of elongation or ubiquitous pausing. **Molecular Cell** **23**:231-239.
38. Herbert, K.M., A. La Porta, B.J. Wong, R.A. Mooney, **K.C. Neuman**, R. Landick, and S.M. Block (2006). Sequence-resolved detection of pausing by single RNA polymerase molecules. **Cell** **125**:1083-1094.
39. **Neuman, K.C.***, O.A. Saleh, T. Lionnet, G. Lia, J.-F. Allemand, D. Bensimon, and V. Croquette (2005). Statistical determination of the step size of molecular motors. **Journal of Physics-Condensed Matter** **17**:S3811-S3820.
40. **Neuman, K.C.**, E.A. Abbondanzieri, and S.M. Block (2005). Measurement of the effective focal shift in an optical trap. **Optics Letters** **30**:1318-1320.
41. Lang, M.J., P.M. Fordyce, A.E. Engh, **K.C. Neuman**, and S.M. Block (2004). Simultaneous, coincident optical trapping and single-molecule fluorescence. **Nature Methods** **1**:133-139.

Keir C. Neuman

42. **Neuman, K.C.** and S.M. Block (2004). Optical trapping. **Review of Scientific Instruments** **75**:2787-2809.
43. **Neuman, K.C.**, E.A. Abbondanzieri, R. Landick, J. Gelles, and S.M. Block (2003). Ubiquitous transcriptional pausing is independent of RNA polymerase backtracking. **Cell** **115**:437-447.
44. **Neuman, K.C.**, E.H. Chadd, G.F. Liou, K. Bergman, and S.M. Block (1999). Characterization of photodamage to *Escherichia coli* in optical traps. **Biophysical Journal** **77**: 2856-2863.
45. Prenner, E.J., R.N. Lewis, **K.C. Neuman**, S.M. Gruner, L.H. Kondejewski, R.S. Hodges, and R.N. McElhaney (1997). Nonlamellar phases induced by the interaction of gramicidin S with lipid bilayers. A possible relationship to membrane-disrupting activity. **Biochemistry** **36**:7906-7916.
46. Farkas, G., C. Toth, **K.C. Neuman**, and F.K. Tittel (1996). Wavelength dependence of harmonic generation efficiency at metal surfaces induced by femtosecond Ti:sapphire laser pulses. **Optics Communications** **132**:289-94.
47. Perkins, W.R., R.B. Dause, R.A. Parente, S.R. Minchey, **K.C. Neuman**, S.M. Gruner, T.F. Taraschi, and A.S. Janoff (1996). Role of lipid polymorphism in pulmonary surfactant. **Science** **273**:330-332.
48. Donnelly, T.D., T.Ditmire, **K. Neuman**, M.D. Perry, and R.W. Falcone (1996). High-order harmonic generation in atom clusters. **Physical Review Letters** **76**:2472-2475.
49. Gauthier, J.C., S. Bastiani, P. Audebert, J.P. Geindre, **K. Neuman**, T. Donnelly, M. Hoffer, R.W. Falcone, R. Shepherd, D. Price, and B. White (1995). Femtosecond laser-produced plasma X-rays from periodically modulated surface targets. **Proceedings of the Society for Optical Engineering** **2523**:242-253.

Invited Presentations

- 2016 University of Maryland Baltimore County Department of Chemistry Colloquium, Baltimore, MD
- 2016 Aspen Center for Physics Workshop on Physics of Development and Disease, Aspen, CO
- 2015 EMBO Workshop: *DNA topoisomerases, DNA topology and human health* Les Diablerets, Switzerland
- 2015 Optics in the Life Sciences Congress, Vancouver, Canada
- 2015 Biophysics colloquium, Cornell University, Ithaca, NY
- 2015 Biophysics colloquium, Emory University, Atlanta, GA
- 2014 Boise State University, Department of Biomolecular Sciences, Boise, ID
- 2014 Gordon Research Conference: *DNA Topoisomerases in Biology and Medicine* Sunday River, ME
- 2014 Gordon Research Conference: *Single Molecule approaches to Biology*, Lucca, Italy
- 2014 World Congress of Biomechanics symposium: “*Single molecule mechanics of motor proteins and motor assemblies*” Boston, MA
- 2014 University of California, Irvine, Department of Chemistry, Irvine, CA
- 2013 Brandeis University, Department of Biochemistry, Waltham, MA

Keir C. Neuman

- 2013 Telluride workshop on Biophysical Dynamics, Telluride, CO
- 2013 Institute of Genetics and Molecular and Cellular Biology, (IGBMC, Inserm/CNRS/University of Strasbourg), Strasbourg, France
- 2013 Korea Institute for Advanced Study (KAIS) KIAS conference: "subcellular dynamics" Seoul, Korea. *Declined due to NIH travel restrictions*
- 2013 George Washington University, Department of Electrical and Computer Engineering. *Nanotechnology and Biomedical Engineering Workshop* Washington, DC
- 2013 American Physical Society March meeting, Focus session "Single Molecule Studies of Nucleotides and Nanomachines" Baltimore, MD
- 2013 Eotvos University, Department of Biochemistry. Budapest, Hungary
- 2013 NIH Research Festival Symposium, "Matrix biology and matrix remodeling" Bethesda, MD
- 2012 Georgetown University, Department of Physics, Washington, DC
- 2012 National Institute of Standards and Technology, Radiation and Biomolecular Physics Division, Gaithersburg, MD
- 2012 Washington University, Department of Orthopædic & Sports Medicine, Seattle, WA
- 2012 University of Southern California: *Stauffer symposium*, Los Angeles, CA
- 2012 Biophysical Society Annual Meeting: *Future of Biophysics Burroughs Wellcome Fund symposium*, San Diego, CA
- 2011 Topo2011, Taipei, Taiwan
- 2011 Max Planck Institute for Biophysical Chemistry, Gottingen, Germany
- 2011 Ecole Supérieure de Physique et de Chimie Industrielles, Paris, France
- 2011 Janelia Farm/NIH young investigators meeting, Bethesda, MD
- 2011 National Institute of Diabetes and Digestive and Kidney Diseases, NIH, Laboratory of Cellular and Developmental Biology, Bethesda, MD
- 2011 American Physical Society March meeting: Focus session "Novel single-molecule approaches to biology" Dallas, TX
- 2011 George Washington University, Department of Biochemistry and Molecular Biology, Washington, DC
- 2011 University of Maryland, Biophysics Colloquium, College Park, MD
- 2010 The University of Alberta, Department of Physics, Edmonton, Canada
- 2010 NIH Research Festival Symposium, Bethesda, MD
- 2010 Statistical physics and topology of polymers with ramifications to structure and function of proteins, Kyoto, Japan
- 2009 The Carnegie Institution, Department of Embryology, Baltimore, MD
- 2009 Catholic University of America, Department of Physics, Washington, DC
- 2009 National Institute of Allergy and Infectious Disease, NIH, Laboratory of Cellular and Molecular Immunology, Bethesda, MD

Keir C. Neuman

- 2009 George Washington University, Department of Mechanical and Aerospace Engineering, Washington, DC
- 2008 Cohen Foundation Single-Molecule Biophysics Symposium, College Park, MD
- 2008 Workshop on Site-Specific Recombination and Transposition, Woods Hole, MA
- 2008 Simon Fraser University, Department of Physics, Burnaby, Canada
- 2008 National Institute of Child Health and Disease, NIH, Laboratory of Physical and Structural Biology, Bethesda, MD
- 2008 American Society for Biochemistry and Molecular Biology Annual Meeting: "*The Form and Function of Molecules and Machines*", San Diego, CA
- 2008 National Institute of Standards and Technology, Physical Sciences Division Gaithersburg, MD
- 2008 Biophysical Society Annual Meeting: Symposium: *Nucleic-Acid Based Motors*, Long Beach, CA
- 2007 National Cancer Institute, NIH, Laboratory of Molecular Pharmacology, Bethesda, MD
- 2007 University of Pennsylvania, Department of Physics, Philadelphia, PA
- 2007 University of Chicago, Department of Biochemistry and Molecular Biology, Chicago, IL
- 2007 University of New Mexico, Department of Physics and Astronomy, Albuquerque, NM
- 2007 University of Maryland, Department of Bioengineering, College Park, MD
- 2007 Technical University Delft, Kavli Institute of Nanoscience, Delft, The Netherlands
- 2007 Vrije University Amsterdam, Department of Complex Systems, Amsterdam, The Netherlands
- 2007 DNA Supercoiling and Topoisomerases: Session: *Chirality Sensing by Topo* Frejus, France
- 2007 Johns Hopkins University, Department of Mechanical Engineering, Baltimore, MD
- 2006 Duke University, Program in Genetics and Genomics, Raleigh, NC
- 2006 Carolina Biophysics Symposium, Chapel Hill, NC
- 2005 Biolimage Summer School, Paris, France
- 2005 Physics of Life: From Single Molecules to Networks, Copenhagen, Denmark